St. Xavier's College (Autonomous), Ahmedabad
Syllabus of Semester – IV of the following departments under Faculty of Science based on Under Graduate Curriculum Framework – 2023 (NEP) to be implemented from the Academic Year 2023-24.

FACULTY OF SCIENCE

DEPARTMENT OF STATISTICS

Course	Title	Content	Hours/Week	Credit
SEC	Advance Statistical analysis using JAMOVI software	U-1: Introduction to Statistical hypothesis U-2: Parametric and non-parametric test U-3: Presentation of Data U-4: Small Project based on application of JAMOVI	4 hrs	**2**

SKILL ENHANCEMENT COURSE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course (Total - 02 Credit)			Prerequisite(s) of the Course (if any)
	Lecture	Practical	Experiential lab	
Advance Statistical analysis using JAMOVI software	0	4	0	Basic Mathematics, Observation & Analytical Skills

Course Outcomes:

CO-1 Understand the basics of inferential statistics, including hypothesis testing, confidence intervals, and p-value.
CO-2 Learn to perform common statistical tests, such as t-tests, correlation, regression, chi-square tests, and non-parametric tests.
CO-3 Develop skills in interpreting statistical results and making informed conclusions based on analysis outcomes.
CO-4 Learn how to generate reports and export results, tables, and charts for presentations or publications.

Learning Outcomes: At the end of this course students are expected to be able-

1. Understand and apply basic inferential statistics techniques such as hypothesis testing, confidence intervals, and p-value.

2. Conduct common statistical tests such as t-tests, correlation, regression, chi-square tests, and non-parametric tests to analyze relationships and differences within data.
3. Interpret the results of statistical analyses accurately, drawing meaningful insights and conclusions based on the findings.
4. Generate comprehensive reports summarizing analysis procedures and results, and export tables, charts, and data for further analysis or presentation purposes.
5. Apply learned skills in statistical analysis to various domains, including academic research, business analytics, healthcare, and social sciences.

Unit 1: Introduction to Statistical hypothesis (04Hrs)

- Introduction
- Hypothesis and Hypothesis testing
- Errors in Hypothesis Testing
- P value of Statistical Tests
- Large Sample Tests
- Small Sample Tests

Unit 2: Parametric and non-parametric test (12Hrs)

- Parametric test: One sample – Two samples independent t – test, Paired t – test.
- Non – parametric test – One sample KS test – Mann-Whitney U test – Wilcoxon Signed Rank test – Chi- square test.

Unit 3: Correlation and Regression (18Hrs)

- Introduction of Linear Correlation
- Methods to find Linear correlation
- Introduction to Regression Analysis
- Types of Regression Analysis Models
- Non-Linear Regression.

Unit 4: Small Project based on application of JAMOVI (06Hrs)

References:

1. "Discovering Statistics Using Jamovi" by Andy Field, Jeremy Miles, and Zoë Field.
2. "Statistics with Jamovi for Dummies" by Greg Fox and Michael Mitchell.
3. "Introduction to Statistics: A Hands-on Approach with Jamovi" by Robert V. Hogg, Elliot A. Tanis, and Dale Zimmerman.

Pedagogy:

1. The course is taught using computer to solving problem through examples and exercises.
2. Students are encouraged to use resources available on open sources.